

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

13 DEC 2004

(43) International Publication Date
24 December 2003 (24.12.2003)

PCT

(10) International Publication Number
WO 03/106654 A2

- (51) International Patent Classification⁷: **C12N** Diego, CA 92119 (US). **ESTEGHLALIAN, Alireza** [CA/US]; 9245 Regents Road, Apt. M302, La Jolla, CA 92037 (US).
- (21) International Application Number: PCT/US03/19153
- (22) International Filing Date: 16 June 2003 (16.06.2003) (74) Agent: **EINHORN, Gregory, P.**; Fish & Richardson P.C., 4350 La Jolla Village Drive, Suite 500, San Diego, CA 92122 (US).
- (25) Filing Language: English
- (26) Publication Language: English (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (30) Priority Data: 60/389,299 14 June 2002 (14.06.2002) US (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application: US 60/389,299 (CON) Filed on 14 June 2002 (14.06.2002)
- (71) Applicant (*for all designated States except US*): **DI-VERSA CORPORATION** [US/US]; 4955 Directors Place, San Diego, CA 92121 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **STEER, Brian** [CA/US]; 1136 Missouri Street, San Diego, CA 92109 (US). **CALLEN, Walter** [US/US]; 3469 Stetson Avenue, San Diego, CA 92122 (US). **HEALEY, Shaun** [US/US]; 7405 Charmant Drive, #2427, San Diego, CA 92122 (US). **HAZLEWOOD, Geoff** [GB/US]; 13041 Caminito Bautizo, San Diego, CA 92130 (US). **WU, Di** [CN/US]; 11767 Westview Parkway, San Diego, CA 92126 (US). **BLUM, David** [US/US]; 7057 Cowles Mountain Boulevard, San
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— without international search report and to be republished upon receipt of that report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: XYLANASES, NUCLEIC ACIDS ENCODING THEM AND METHODS FOR MAKING AND USING THEM

(57) Abstract: The invention relates to xylanases and to polynucleotides encoding the xylanases. In addition, methods of designing new xylanases and methods of use thereof are also provided. The xylanases have increased activity and stability at increased pH and temperature.



WO 03/106654 A2